

REMARKS

Claims 1-16 are all the claims pending in the application. Claims 1-8 have been amended to improve their form and/or clarity. These amendments are not to be deemed to narrow the scope of the claims. In addition, new claims 9-16 have been added based on original claims 1-8, and thus, no new matter has been added.

The specification has been amended to insert headings in the specification.

Entry of the above amendments is respectfully requested.

I. Objection to the Specification

The specification is objected to because there is a lack of section headings. The specification has been amended to insert headings. Accordingly, withdrawal of the objection is respectfully requested.

II. Response to Rejection of Claims under 35 U.S.C. § 103(a)

Claims 1-2 and 6-7 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over either Birat et al (US 5,172,750) or Tonelli et al (US 6,378,598) in view of JP 60-221155 (hereinafter "JP '155").

Applicants respectfully traverse the rejection.

Independent claim 1 recites a side wall (1) of a plant for the continuous casting of metal strip (5) made of refractory comprising: a support plate (6) on the front face of which a recess (7) is made; an Insert (9) made of hard material placed around the periphery of the recess (7); a lining (11) that fills the remainder of the recess (7); wherein the front face (12), turned towards the casting space, of the lining (11) is set back by a maximum distance (d) from the front face (13) of the insert (9) over at least part of its length.

Birat and Tonelli both describe side walls for a twin-roll continuous casting machine having a support plate with a recess, a hard insert set along the periphery of the recess, and a packing which fills the remaining volume of the recess.

Specifically, in Birat, when the side wall is new, the packing protrudes ahead of the insert, at least locally, so as to penetrate within the casting space on the whole height of it when the insert contacts the plane lateral surfaces of the rolls.

In Tonelli, the insert and the packing are flush.

It is respectfully submitted that the present invention is the exact contrary of Birat. Claim 1 requires the surface of the packing be back from the surface of the insert over at least a part of the casting space in order to avoid the development of "spurious solidifications", which would downgrade the strip edges quality and the sealing of the casting space.

JP '155 describes a machine of a different concept. Here, the side walls are not pressed against the plane lateral surfaces of the rolls, but rest on the cylindrical surfaces of the rolls, while penetrating within the space which separates the surfaces of the rolls. Horizontal longitudinal dams complete the delimitation of the casting space, within which liquid metal is present. The side walls have each a V-shaped recess, which is intended to avoid the penetration and solidification of metal at their contact areas with the rolls.

According to the Examiner, it would have been obvious to modify Birat and Tonelli by using this configuration to arrive at the present invention.

Applicants respectfully disagree.

It is respectfully submitted that the contact areas have different configurations in JP '155 (tri-dimensional) and in the present invention (plane).

The main difference is that in JP '155, the V-shaped recess remains, on its whole height and width, above the inter-roll region or above the cooled cylindrical surfaces of the rolls. In contrast to the present invention, it does not laterally extend the space where liquid metal is present out of the inter-roll space, so as to build a bulk of liquid metal which is not cooled by the rolls and is able to avoid the building of spurious solidifications, or to melt these spurious solidifications immediately after their formation, in the vicinity of the contact areas between the side walls and the plane surfaces of the rolls.

In addition, in JP '155, the effect of the V-shaped recesses, coupled with a high thickness of the side walls (as disclosed in the abstract), is mainly to sensibly increase the size of the contact areas between the side wall and the cylindrical surfaces of the rolls, as compared with the classical thin side walls shown on Figure 1 of JP '155. Thus, it is more ensured that the liquid steel, which would escape from the casting space, can solidify before escaping from the intervals, which could possibly exist between the rolls and the side walls, in case of a bad and uneven contact between them. Also, if compared to a thick side wall which would have a uniform thickness, the V-shaped recess allows sparing of the costly refractory material. Such functions do not correspond to the functions of the recesses of the present invention.

Furthermore, a negative consequence of the recesses of JP '155 is that they risk causing a non-homogeneous solidification of the strip at its edge parts because the strip solidification initiates along the V-shaped contact line of the side wall and the roll.

In the present invention, there is no such a drawback since the recess forms an un-cooled volume and stops above the lower altitude of the casting space (see reference 3 of the Figures). As a result, the strip solidification is performed classically in a homogeneous way on

the whole roll width.

For at least the above reasons, it is respectfully submitted that the present invention cannot be achieved from the combination of Birat or Tonelli with JP '155, particularly since the recesses of JP '155 are different from those of the present invention and function differently.

Moreover, a mere transposition of the recesses of JP '155 in the invention of Birat would cause suppression of the penetrating part of the side walls of Birat, which is one of the main features of Birat.

In view of the above, the present invention according to claim 1 is not obvious in view of the combination of Birat or Tonelli with JP '155.

Accordingly, it is respectfully submitted that claims 1-2 and 6-7 are patentable over Birat or Tonelli with JP '155, and withdrawal of the rejection is respectfully requested.

Claims 3-5 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over either Birat et al or Tonelli et al in view of JP '155, and further in view of Damasse et al (US 6,082,437).

Applicants respectfully traverse the rejection.

It is respectfully submitted that claims 3-5 are patentable over the cited art for the same reasons as claim 1 by virtue of their dependency from claim 1.

In addition, Damasse discloses a penetrating insert where the lower part of which is made of a soft material, which gets worn in a controlled manner by the solidified lateral part of the strip during the casting. The aim of such a configuration is not to obtain a recess on the surface of the side wall in an area where liquid metal would still contact the side wall. Thus, Damasse does not make up for the deficiencies of Birat or Tonelli and JP '155.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 10/519,750

Attorney Docket Q85323

Accordingly, withdrawal of the rejection is respectfully requested.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Birat et al or Tonelli et al in view of JP '155 and further in view of Damasse et al (US Patent 6,148,901).

Applicants respectfully traverse the rejection.

It is respectfully submitted that claim 8 is patentable over the cited art for at least the same reasons as claim 1 by virtue of its dependency from claim 1.

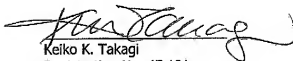
Accordingly, withdrawal of the rejection is respectfully requested.

Finally, it is respectfully submitted that new claims 9-16 are patentable for the same reasons as claims 1-8.

In view of the foregoing, reconsideration and allowance of claims 1-16 is respectfully requested.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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